February 1945

Marketing activities

WAR FOOD ADMINISTRATION
Office of Marketing Services

IN THIS ISSUE:

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Address all inquiries to
Elbert O. Umsted
Editor, Marketing Activities
War Food Administration
Washington 25, D. C.

Issued monthly. Vol. 8, No. 2

Tomorrow's Beefsteaks

. . . . By D. S. Burch

The beefsteaks of tomorrow--hasten the day!--will be the kind you dream about, secretly hope for, but never really expect to find. They'll be that good because they'll come from cattle bred and fed to please the palate rather than the eye--though actually they'll do both.

Plans and specifications, so to speak, for quantity output of this high-quality beef are already well advanced. In developing them, research scientists of the U. S. Department of Agriculture and their colleagues in the State colleges and the meat industry have dropped some old traditions and have added innovations. Like the originators of ox-tail soup, they have gone a long way back for the basic material, but they have added other ingredients among which, in the case of tomorrow's beefsteaks, are unleashed originality, new technical data, and perseverance.

Knighted Cut

It is common knowledge that most of the highly specialized beef breeds of cattle, such as the Shorthorn, Hereford, and Aberdeen Angus, have been centuries in the making. In Great Britain where they were developed, King Charles II was so delighted with the quality of a particular beef loin that he knighted the cut--now the familiar "sirloin." Some historians credit the same act to Henry VIII and James I. At any rate, into the development of choice beef cattle have gone the skill and artistry of famous breeders--men who conjured up an ideal animal and then by skillful selection worked to make it a reality. They displayed their creations at stock shows which promptly became, as they are to this day, colorful events.

But while grand champion steers and other prize winners generally yield high-quality beef, several sober facts have confronted breeders and stockmen in general. One is the considerable range in quality even among seemingly well-bred lots of animals. And besides the good ones there are generally some culls, comprising the tag end of the herd. Another problem is that of finish. A liberal amount of fat seems necessarily to come with tender, juicy, flavorful meat. Yet most consumers look upon much fat as wasteful. The problem in this case is to get

better distribution of the fat, preferably in shining rivulets through the lean and less in thick layers.

Although he is not too familiar with the details of these and related production problems, the consumer has learned about them in a general way. He has also made some comparisons and is baffled. If an apple orchard or a strawberry bed, he ponders, can produce fruit of uniformly fine texture and flavor, true to its variety, why shouldn't the same be true of a whole herd of cattle?

Prompted by much the same reasoning, trained livestock and meat specialists have done some serious thinking. In wartime, of course, when hunger stalks many lands, the quality of food is less important than quantity, quickly obtained. But looking ahead beyond the war to a time when quality will again loom large in the economics of meat production, the specialists have been taking stock of the manner in which science can serve producers and consumers alike. And these specialists have already come forward with illuminating findings.

Guinea Pigs

In exploring new biological fields, investigators commonly pick out inexpensive small forms of life to use as "guinea pigs." That is just what the Department scientists did in this case. And for guinea pigs they used guinea pigs--thousands of them, including inbred families, control stock, and crossbreds. The geneticists collected data on weight, size, color, fecundity, abnormality, and other traits. Using methods of statistical analysis unknown to early cattle breeders, they worked out curves and charts to get a clear picture of how heredity works, and especially of the extent to which inbreeding can safely be used to purify germ plasm, so as to produce animals of uniformly high quality.

One finding highly significant in the light of later studies was "that rate of maturity can be altered by breeding" and that "fast-maturing animals are usually smaller than the slow-maturing ones." In addition, the studies showed the importance of "conditions of optimum nutrition and environment" in connection with breeding in any thorough-going test of productive efficiency. Only under such conditions, the scientists declared, can differences in rate of gain and maturity "be brought to light and fixed." These findings led to extensive record-of-performance studies that were essentially a search for living patterns--animals that would consistently produce high-quality offspring.

The four main specifications were: (1) Good weight for age, promising rapid growth; (2) desirable proportions--meaning, in particular, good development of parts that produce the choicest cuts; (3) quality of meat, to bring consumer satisfaction; and (4) efficiency in the use of feed, essential from a business standpoint. Research showed that this combination of qualities in one animal was attainable.

Records of performance for beef cattle are by no means revolutionary. They follow much the same trail as that blazed by dairy cattle and poultry. Long ago close observers found that even the most skilled judges could not identify the best milk cows--but records did. Poultry judges also missed badly in picking out the top-flight layers, but here again production records put the finger on them accurately. With these precedents plus the direct evidence that research has provided, the investigators are now confident that they are on the right road to more efficient cattle production.

Picture Incomplete

The full picture of record-of-performance procedures as applied to beef is still incomplete. It resembles a jigsaw puzzle with many parts neatly fitted together but with others yet to be supplied. In line with the need for good feeding and environment--so that high quality cattle can show their true worth--the scientists have determined that feeds produced in soil containing minerals essential to good grass, forage, and grain crops play a big role in yields of high-quality beef. They have extended their studies also into the fields of meat grading, storage, refrigeration, and finally into the culinary and gastronomic field--the final proving ground of food products.

Breeding, the scientists found, has a definite influence on the tenderness, palatability, and nutritive value of beef. For instance, a 3-year test of 2 Hereford sires showed that the calves of 1 yielded appreciably more tender meat than those of the other. The studies also furnished evidence that the proportion and distribution of fat are influenced by genetic factors. In another comparison, samples of meat from steers of the same breed but differing in type varied as much as 12 percent in moisture content, 23 percent in fat, 14 percent in protein, and 7 percent in ash. Differences in juiciness of the meat were also observed. Results of other experimentation showed that a bull's first 5 to 10 calves are enough to establish his value as a sire.

It is not necessarily true that the meat of a young animal is tender and that of an old one tough, although tenderness generally decreases as an animal gets older. Likewise rapid growth, which commonly means greater economy of feed, increases the likelihood of tenderer meat. Steers have been found to yield more lean meat and bone than unbred heifers of comparable weight. Various feed combinations and levels of feeding, the research showed, affected the composition as well as the tenderness of the meat.

In the chemical field--and this pervades practically all branches of animal science--one current practice based on research is the use of disodium phosphate in drinking water to make cattle breed better and grow faster. The phosphate is added to the drinking water to help make up for a phosphorus deficiency that exists in some areas in the soil and the resulting vegetation. In parts of Texas where the deficiency has been serious, the use of such a supplement has become popular with many

ranchmen. Under some circumstances phosphorus is given in the feed, or a fertilizer rich in phosphorus is added to the soil, with results of both more and better beef.

The color factor in beef has received scientific study. White fat in beef has been generally preferred in the meat trade and by consumers. Yet yellow fat, found as often in fresh beef, is caused chiefly by the deposition of carotene from such feeds as legume hay and grass. Since carotene is the so-called precursor, or carrier, from which vitamin A is developed by the body, yellow fat in beef may indicate higher vitamin-A potency than white fat and thus be an advantage rather than a cause for discrimination. Still on the color subject, the investigators confirmed the trade observation that older cattle have darker meat than young cattle, but found that dark meat is not necessarily lower in palatability and tenderness.

The influence of feed on meat quality pops up repeatedly in various lines of experimentation. In a mechanical test of cooked meat, 15 percent more force was required to shear through roasted rib samples from steers fed on grass alone than through similar samples from steers that had received, in addition to pasture, a grain feed of corn and cottonseed meal. Much can be said, however, for well-finished grass-fed beef, and the economy of its production.

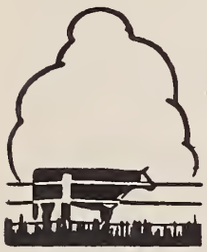
Crystal Gazing

This mechanical test was developed to eliminate, so far as possible, the element of human error in rating meat for tenderness. The instrument records the amount of pressure needed to cut through a sample of meat. But lest it be assumed that research is always cold and calculating, with no room for crystal gazing, the scientists have sprung a surprise. Through a study of the size and number of ice crystals that form in the muscle tissue of frozen beef, they have found a way of freezing that makes the meat tenderer. For instance, beef frozen and stored at 20° F. was about 12 percent more tender than beef chilled at 34°; and beef frozen at -10° or -40° was still more tender--about 18 percent more in both cases--than the chilled beef. A splitting by the ice crystals of the fibers in the meat is the scientists' explanation of the tenderizing effect of very low temperatures. They found no such crystals within the fibers at temperatures only a few degrees below freezing. At 0° F. the crystals became clearly evident, and at still lower temperatures they were finer and more plentiful.

Freezing may also be used in combination with the familiar practice of aging, or ripening, beef at a temperature of 34° to 38° F., which checks bacterial action but enables the natural enzymes in the meat to develop and tenderize it. Porterhouse steak ripened for 35 days after slaughter of the animal proved to be 28 percent tenderer than that ripened only 5 days. The freezing of beef after aging tenderizes it further, but the effect of freezing decreases as the aging period increases.

Still other experiments have dealt with meat shrinkage during cooking, through evaporation or dripping losses. These can be accurately measured, by weight, and correlated with cooking time, oven temperatures, and other factors. For flavor evaluation, chief reliance is on panels of expert meat judges, which commonly include both men and women.

Upsetting the old theory that meat must be seared if the juices are to be held, the investigators found that moderate temperature throughout the cooking period, and cooking the meat only until it is as done as is desired, are far more effective in keeping shrinkage to a minimum and yielding a tender, juicy, evenly cooked cut.



A broad view of progress to date indicates that most of the developments mentioned are already bearing commercial fruit, at least on a small scale. Necessarily, economic factors loom large in practical applications, especially those that involve production costs. Prices of cattle, feed, labor, and land--present and prospective--influence both the quality of beef and its output. The results of research on meat ripening, refrigeration, and storage can probably be applied sooner. So can those on cookery.

Details of most of these findings are of public record. Probably nowhere else in the world is there such a happy combination of helpful available information on stock raising and its end product--meat--as in the United States. So after the war when you order a juicy steak or relax over an informal hamburger, you may thank the research scientist as well as the chef if you find it more satisfying and better tasting than any you have eaten before.

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Under an amendment effective January 25, WFO 17 (dried fruits) now includes in its definition of "raisins" all damaged or substandard raisin stocks and all sweepings, stems, and "blows."

Originally issued in January 1943, WFO 17 restricts the sale of raisin-variety grapes and Zante currant grapes grown in certain California areas to WFA or to dehydrators for the purpose of converting them into raisins and Zante currants. It also prohibits conversion of raisins and Zante currants into alcohol, brandy, wine, or any beverage (alcoholic or not), any concentrate, sirup, or any nonfood product or nonfood byproduct.

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Because of existing uneven distribution of linseed oil among users, WFA has limited individual inventories to one-third of the quantity used in the previous calendar quarter. Effective January 31, the order (WFO 124) requires flaxseed crushers to obtain from users with each delivery of oil a certificate stating that the quantity being accepted is within the terms of the order.

Containers on Trees?

By J. H. Heckman

Last year, fresh fruit and vegetable growers and shippers were able to get a lot of new containers by placing their orders well in advance and by taking delivery whenever the containers were ready. By ordering consistently throughout the season, they managed to get a great number of used containers also. They built up their stocks in the winter. Winter is a good time to accumulate new and used containers because the heavy seasonal demands are not far off and because container dealers must free the space these containers occupy if they are to collect still more containers.

This present winter, though, growers and shippers haven't been stocking up very fast. Today used container dealers who a year ago had more orders than they could fill are looking for business. Some container manufacturers are looking for business, too. There is a feeling that there will be time enough later to get in the crates and hampers.

But . . . is this comfortable assumption based on actual prospects? Let's go back a little.

Last Winter

Last winter it looked as if fruit and vegetable growers and shippers might not have enough containers for the production expected. Numerous difficulties and shortages had developed in 1943 despite the fact that production of both fresh fruits and vegetables had been curtailed. Labor problems were getting bigger. In the fruit and vegetable container industry only the western box manufacturers seemed likely to increase their production over the preceding year (and even that depended on the availability of ponderosa pine lumber). The wirebound box industry could maintain production only if it got help to solve its labor and log problems. Basket and hamper manufacturers estimated that unless they had help, their 1944 production might drop 25 percent under that of 1943.

To help out, the War Food Administration and other Government agencies acted in two directions. They assisted container manufacturers with their production problems--particularly with labor difficulties--and WFA conducted a program aimed at obtaining the maximum salvage and reuse of second-hand packages.

Both actions got results. Container manufacturers report increased production (over their previous estimates) during the late summer months

as a result of the help they received on manpower problems. The wirebound box industry reports that its 1944 output was up 4 million packages, or 8 percent, from 1943. Production of baskets and hampers in 1944, which a prediction in February of that year had set at 75 percent of 1943 production, increased during the late summer until the reduction from 1943 may not have been more than 15 percent. The production of wooden boxes increased substantially in the West (though these boxes were used chiefly in the West to handle increased production there).

This work by the trade and Government to increase the supply of containers was certainly not wasted. The season brought record crops of both fruits and vegetables. Production of fresh vegetables for market exceeded that of 1943 by 19 percent. The fruit crop for the fresh market was up to the point where the combined production of fresh fruits and vegetables exceeded the tonnage of 1943 by 13 percent.

In the Middle West and East (the basket and hamper territory) where the package difficulties were greatest, production varied most. For example, here the apple crop was about one and a half times as large and the peach crop was three times as large as in 1943.

Needs Outstrip Container Production

Faced with rising needs for containers and increasing problems of labor and supplies, the container industry did what it could. It increased its production in late summer--at the time and place (the Middle West and the East) it was most needed. But container production fell short of needs as the total production of fresh fruits and vegetables increased more than container production increased.

The established fresh fruit and vegetable dealers report increases in their 1944 business in some cases as high as 50 percent. In general, the increased production in all areas except the far West was packaged in carry-over inventory, in bags and other substitute packages, and in second-hand containers. (There were sizable carry-over inventories of lugs in the early-tomato sections and of baskets in the early-peach and the eastern and midwestern apple "deals.")

Let's look at a few examples of how growers and shippers coped with difficulties. From New Jersey come reports that the cooperative auctions in that State served as depots for accumulation and supply for growers in their districts. During the winter, hundreds of thousands of packages were bought and stored--enough to tide over the summer tight spots. There is an estimate from Connecticut that about 70 percent of that State's apple crop was marketed in second-hand containers (in spite of the large quantities of fruit ruined by the hurricane). In Michigan the cooperative exchanges and growers stocked packages heavily in the winter, and during harvesting the fruit was sold in field crates on an exchange basis in markets as far off as 300 miles. Virginia for the first time reports the storage of apples in bags.

Only by taking these and similar measures were growers and shippers able to market the crop. Indeed, even then some of it did not get marketed--certain Appalachian apples and midwestern apples, for example. And greater than normal losses occurred in storage owing to the lack of suitable containers.

So much for last year's production of fresh fruits and vegetables; the means by which growers, shippers, container manufacturers, and Government sought to package that production for marketing; and the difficulties which their combined efforts overcame. What about the season of 1945? Will there be enough containers to go around without anyone's having to do much about it--or must we *work* to get them?

In WFA's view there is nothing to indicate that the container industry can supply more packages in 1945 than were made available in 1944. The industry itself believes there will be fewer. Lumber will be tighter, as will other materials; manpower problems are likely to increase; and equipment such as trucks, tractors, and tires will be a year older.

It is true that fruit and vegetable production may not be as great as last season's (so much depends on the weather), but even if total production should be smaller this year, it may still be greater in certain sections of the country. For example, the production of early peaches and midwestern and eastern apples could easily equal or exceed last year's production in those sections.

For these reasons WFA recommends a continuation of the wartime measures that were taken to package the last two fruit and vegetable crops:

1. Place orders for containers as far as possible in advance, and take delivery on them whenever they are available.

2. Salvage and reuse containers. Build up inventories of them at the farm in advance of the season and so release space in which dealers may accumulate more containers.

This is not a scare story. Fruit and vegetable growers and shippers should be *able* to package the 1945 crop. They were able to package last year's crop, and did--but they found that containers did not grow on trees. To get them took planning and work. To get them in 1945 is going to take planning and work again.

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WFA has asked packers of California pilchards, Pacific mackerel, and Pacific horse mackerel to increase their quotas to be reserved for delivery to Government agencies from 55 to 100 percent of each canner's pack. Percentages on other classes of canned fish remain unchanged. The action affects only the fish packed on and after January 14, the effective date.

Our War Bread

. . . . By Stephen O'Dea

When Queen Marie Antoinette was told that her people were crying for bread she is said to have answered, *"Qu'il mange la brioche"*--"Let them eat cake." Some people hold that the lady actually meant, "Let them go to the devil"; others that she was so ignorant of the French people's desperate food situation that she meant what she said literally: If indeed there was no bread, then let people substitute cake--which tasted much nicer anyhow.

So they cut off her head; for man, though he does not live by bread alone, has always lived in discontent when bread became difficult to get.

Something like a year after Pearl Harbor our Government and the baking industry realized they must act at once to stop (1) a threatened price rise in bread and (2) excessive wastes in baking at a time when waste would not do.

Price and Waste

On the price side, it had not taken long for increasing wartime costs--in this case, costs of manufacturing bread and all other bakery products--to threaten an increase to the public in the price of these articles. It was determined, for example, that if the retail price of bread alone were raised just 1 cent a loaf, the added cost to consumers during the following year (1943) would approximate 138 million dollars.

To most people such a rise in price may not seem much; but there are lots of people in this country, even during these days of easy-to-find, good-pay jobs, to whom a cent or two more per purchase on such a basic commodity as bread is important. Moreover, it is the nature of a breach to continue widening under pressure. There was no guarantee, once bread went up a penny a loaf, that the cost would stay down to an annual increase of 138 million dollars. Still further, if the price of bread increased, there would be justification for a price increase of almost anything else.

On the waste side was the immediate need of conserving food supplies and other critical materials used by bakers. Price stabilization

alone would not check certain practices in the baking industry that resulted in the loss of ingredients, materials, and manpower--losses in our war economy more harmful than financial loss.

It was also necessary to distribute bread more economically, to save equipment, and to safeguard bread's nutritional value.

Of all needs, however, the most urgent was a prohibition against consignment selling--the greatest single waste of all. Consignment selling is the acceptance by bakers of returned, unsold baked goods, the retailer receiving credit for items unsold.

And what happened to all the returned bread?

An investigation showed that as a result of (1) consignment selling and (2) the number of varieties of bread made and sold per week, there was an annual waste of approximately 4½ million pounds of shortening, 5½ million pounds of dried milk, and 6 million pounds of sugar--all critical ingredients, and all in bread returned by the retailer as stale and not resold as food for human consumption. And this with shortening and sugar rationed, and dried milk under allocation.

Further, a survey conducted by a private concern of several hundred baking plants revealed a financial loss from returned stale bread of 6.49 percent. And to round out the picture, in 1942, bakery stocks in many grocery stores at the close of business each day amounted to from 30 to 50 percent of bakery stocks sales. Think of that proportion of bread lost to human consumption--of the waste of manpower, materials, and equipment used to make bread most of which was fed to livestock or totally wasted.

Moreover, with so many commodities suffering losses in quality due to wartime restrictions, the basic food also stood in danger of compromise in its ingredients at a time when the health and energy of the Nation had never been more important.

Bakers Go To Work

Fortunately, the baking industry recognized these facts, and the War Committee of the American Bakers Association and the Associated Retail Bakers of America went to work. At the Baking Industry War Conference at Chicago in October 1942, the committee resolved that " . . . regardless of shortages, rationing, or changes in other foods, bread must not change, unless . . . for the better. . . . No shortage, no regulation, no handicap, no obstacle, will distract us from this fundamental resolve and aim--to preserve and enhance the goodness, to assure the adequate supply, of our country's bread. . . . this industry will not . . . maintain Business as Usual."

From here on things moved fast. On December 5, 1942, the President issued Executive Order 9280, which delegated authority respecting the

Nation's food program to the Secretary of Agriculture and required him to "Take all appropriate steps to insure the efficient and proper distribution of the available supply of food."

The Secretary lost no time either. For the newspapers of December 30, 1942, the Department of Agriculture issued a news release: "Wickard Signs Food Order Affecting Baking Industry. . . . Food Distribution Order No. 1, . . . to be administered by the Food Distribution Administration, becomes effective January 18. . . ."

Thus was born the first food distribution order. It later became known as War Food Order 1, but the meaning of the order was not in any way changed.

Under WFO 1 the number of varieties of bread made and sold per week was reduced from as many as the baker pleased--sometimes more than 100--to 20 (although the baker may select any 20). With consignment selling prohibited, during the order's first 3 months the loss from unsold bread was only 1.33 percent (as compared with the 6.49 percent shown in the pre-WFO 1 survey). Also under the provisions against consignment selling, day's-end bakery stocks in grocery stores, which had been running from 30 to 50 percent of daily sales, were reduced to approximately 10 percent. Gone too was the waste of manpower, materials, and other distribution elements that had resulted when bakers and distributors, competing for retail outlets, had given away bread racks, stands, and other display items.

The "enriched" that we see now on bread wrappers also came about under the order. And "enriched" isn't just a word. In milling, the grain that goes into all white bread has suffered the removal of essential vitamins and minerals. Today those elements must be--and WFA sees that they are--restored to the bread. During 1944 WFA tested the bread of more than 1,500 bakeries throughout the country in furtherance of this far-reaching program. Later, and again under the order, milk solids in bread were increased beyond any previous level, which further increased the food value of bread. So the gains go.

How does the baking industry like WFO 1? Ask its members. Ask them if they want the order continued for the duration, and if they want WFA, with their cooperation, to keep on enforcing compliance vigorously. Their answer--a tribute at once to the order and to their industry--will be an overwhelming Yes.

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WFA has amended the pork set-aside order (WFO 75.3) to increase the required percentage of loins. Since January 21, packers operating under Federal inspection have been required to increase, to 4½ from 3½ percent, the quantity of loins to be set aside. Previously packers set aside loins at the rate of 3½ percent of the live weight of each week's slaughter of hogs.

LEE MARSHALL RESIGNS,
NEW WFA DIRECTORS NAMED

On January 31 War Food Administrator Marvin Jones announced the resignation of Lee Marshall, who left WFA on that day to return to private business. Since the previously announced reorganization of January 1, Mr. Marshall had been Director of the Office of Marketing Services and Vice President and Director of Supply of the Commodity Credit Corporation.

C. W. Kitchen was named to succeed Mr. Marshall as Director of the Office of Marketing Services, and Lt. Col. Ralph W. Olmstead was named to succeed Mr. Marshall as Vice President and Director of Supply of the CCC. Carl C. Farrington, as provided in the reorganization, is Vice President and Director of Basic Commodities of the CCC. The CCC is headed by Frank Hancock, whose appointment as President was announced December 15.

Mr. Kitchen, new Director of the Office of Marketing Services, is a veteran employee of the Department of Agriculture, where he has been closely connected with all phases of marketing research and service and regulatory work since 1912. Before the war he was Chief of the Agricultural Marketing Service and during the war he had been Deputy Director of WFA's Office of Distribution (abolished in the reorganization).

The Office of Marketing Services, under Mr. Kitchen, will be responsible for various agricultural marketing programs, including food conservation and limitation orders and their enforcement; estimates of civilian food needs; development of marketing agreement programs; agricultural market news services; and development of Federal standards for agricultural products. The Office is also charged with extensive inspection and regulatory work involving the administration of 25 Federal statutes.

Among the major supply functions of the Commodity Credit Corporation, under Colonel Olmstead, will be purchasing, storing, and shipping of foods to meet the various supply programs of WFA, particularly lend-lease; preparation of food allocation estimates for all claimants on U. S. supplies; price-supporting operations for fruits, vegetables, poultry, and livestock; and sale of Government-owned surplus food stocks. Long-range food allocations will be prepared under the direction of Colonel Olmstead and liaison maintained with foreign food missions and the armed services. Food supply programs for Caribbean and Hawaiian areas will be under his direction as well as the Federal portion of the Community School Lunch Program.

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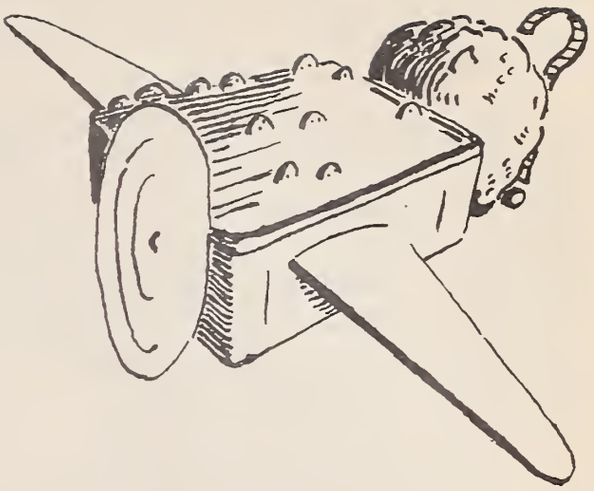
The Director of Marketing Services under an amendment (January 24) to WFO 75 may refuse to issue licenses for the slaughter of meat animals where issuance would interfere with procurement of meat for war needs.

Up in the Air



Owing to the widespread interest among agricultural marketing people in the extent to which agricultural commodities--particularly fresh fruits and vegetables--may be flown to market after the war, *Marketing Activities* this month reprints a paper that was titled "The Use of Surplus War Cargo Planes To Transport Agricultural Perishables." Published in January 1945, the paper was prepared by R. W. Hoecker, of the Bureau of Agricultural Economics, and Richard Kermit Waldo and L. H. Brittin, of the Edward S. Evans Transportation Resecrch.

The subject of agricultural air cargo is very much "up in the air" today, with opinion varying greatly on how much agricultural tonnage will move to market through the skies. In this argument *Marketing Activities* takes no side. It merely thanks the authors for permission to reprint, and recommends the paper to its readers as an interesting contribution to an interesting discussion.

The method finally adopted for the disposal of the surplus war transport aircraft remaining in the possession of the Government at the close of present hostilities is of vital importance to the future of commercial aviation in the United States. The United States has been predominant in the development, production, and use of the transport type of aircraft, and it is of the utmost importance that this position be maintained in the air age just ahead.

The remarkable strides the airline industry has made in economies of operation and in the utilization of equipment have multiplied the carrying capacity of air transportation many times during the last few years.

The problem of the disposal of surplus war transport aircraft should be examined in terms of potential carrying capacity under modern methods of operation rather than as a specific number of planes. In order to visualize this, some comparisons are made between the potential carrying capacity of surplus war transport aircraft and the carrying performance of surface carriers. However, an estimate must first be

made of the number of planes which will form the basis for these capacity comparisons, as this is fundamental to the entire problem of surplus disposal.

On May 26, 1944, Mr. William L. Clayton,[1] at that time the Surplus War Property Administrator, testified before the House Appropriations Committee that if the war continued another year there would be 100,000 surplus war airplanes for sale by the Government. Of this number 15,000 would be transports which, after some alterations, could be used by the airlines. Recent developments in the theaters of war have modified the estimates of 15,000 transport-type ships to be available at the end of the war to 7,500-10,000.

The comparisons shown on this and the next page were made between the annual potential carrying capacity of 5,000, 10,000, and 15,000 assumed surplus war transport aircraft (20 percent 4-engined and 80 percent 2-engined) and the ton-miles produced by the various surface carriers in 1939.[2] In presenting data on the carrying capacity of transport planes it is realized that available cargo in the United States suitable for transport by aircraft is not likely to be adequate fully to utilize a large proportion of these surplus planes.

Reconversion costs for freight carrying would be relatively low. However, reconversion costs for passenger carrying probably would be sufficiently high to limit the use of surplus transport planes for this purpose. Availability to airlines of new and improved equipment would also be a limiting factor. A relatively small number of surplus planes may be used by the airlines until more modern equipment becomes available.

Capacity in Ton-Miles with Comparisons
Are Estimated As Follows:

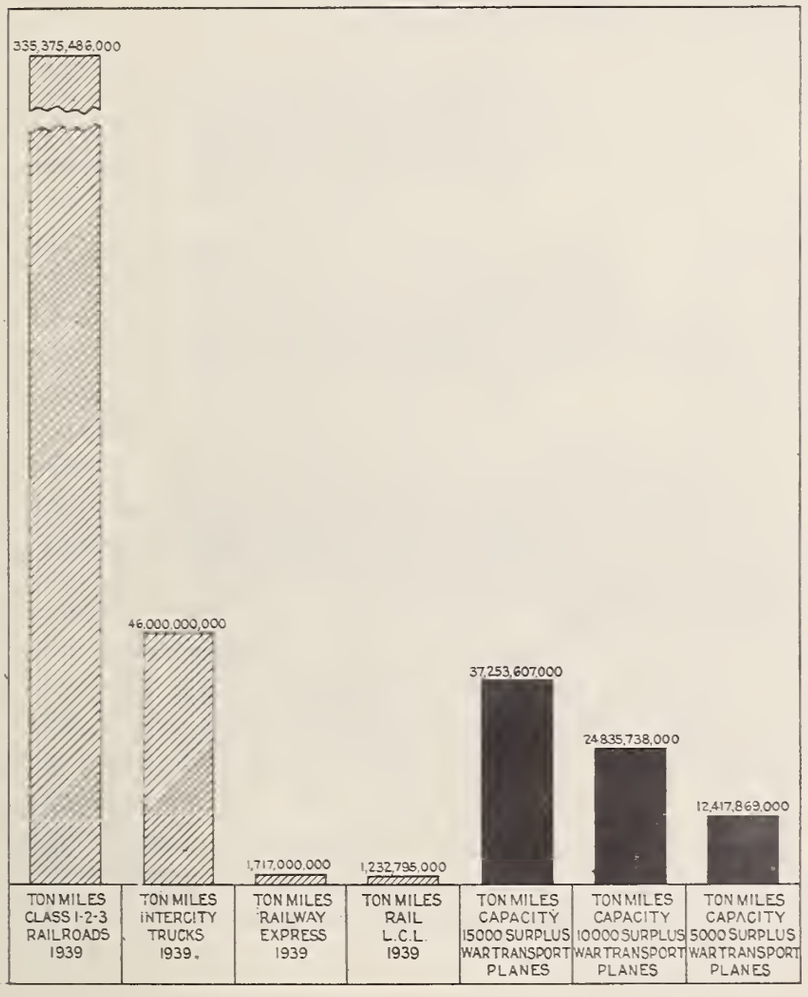
Freight ton-miles by Class I, II, and III railroads in 1939	335,375,486,000
Freight ton-miles by intercity trucks in 1939	46,000,000,000
Express ton-miles by Railway Express in 1939	1,717,000,000
L.c.l. freight ton-miles by Class I, II, and III railroads in 1939	1,232,795,000

[1]American Aviation Daily, May 27, 1944.

[2]For the purposes of convenience, annual ton-miles per aircraft were calculated on the basis of data in two previously published reports of the Bureau of Agricultural Economics and the Edward S. Evans Transportation Research. Data for the C-54A (the representative wartime 4-engine transport) are taken from *Post-War Air Transport Costs and Markets for Lettuce*, by R. W. Hoecker and Richard Kermit Waldo, July 1944, and for the C-47 (the representative 2-engine type) are from *Post-War Air Transportation of Fresh Strawberries and Tomatoes from Florida to Detroit, Michigan*, by R. W. Hoecker, March 1944. These data yield an annual ton-mileage figure of 4,394,197 per plane for the C-54A and 2,005,918 per plane for the C-47. Annual passenger-miles per aircraft were calculated to be 14,484,510 for the C-54A and 6,815,604 for the C-47. These were based on data in the two reports mentioned above, plus an average length of haul per passenger and an average passenger load factor which were in line with pre-war United States domestic airline experience. The maximum passenger capacity of the converted C-54A was taken at a conservative 40, and the converted C-47 was taken at 21.

Potential freight ton-mile annual capacity of
15,000 transport planes. 37,253,607,000
Potential freight ton-mile annual capacity of
10,000 transport planes. 24,835,738,000
Potential freight ton-mile annual capacity of
5,000 transport planes 12,417,869,000

TON MILES OF FREIGHT HAULED BY RAILROADS AND INTERCITY TRUCKS IN 1939 AND THE TON MILES CAPACITY OF SURPLUS WAR TRANSPORT PLANES



The ton-miles producible by 15,000 planes are 11.1 percent (or 1/9) of rail freight traffic; 81.0 percent (or 4/5) of truck freight traffic; 21-3/4 times rail express traffic; 30-1/5 times rail l.c.l. freight traffic.

The ton-miles producible by 10,000 planes are 7.4 percent (or 1/13) of rail freight traffic; 54.0 percent (or 1/2) of truck freight traffic; 14-1/2 times rail express traffic; 20-1/7 times rail l.c.l. freight traffic.

The ton-miles producible by 5,000 planes are 3.7 percent (or 1/26) of rail freight traffic; 27.0 percent (or 1/4) of truck freight traffic; 7-1/4 times rail express traffic; and 10 times rail l.c.l. freight traffic.

Two possible outlets for disposal of these surplus transport planes are:

(1) Retention by the armed forces. The Harvard Report on *Disposal of Surplus Aircraft*[3] expresses the opinion that a larger number than is commonly estimated will be retained in military service for several years after the close of the war. If these planes are retained by the military they would not be considered surplus planes for sale by the Government.

(2) Absorption by our domestic and foreign commercial aviation. The Harvard Report estimates that a minimum of 1,050 transport planes and a maximum of 5,200 transport aircraft may be utilized in this field.

[3] *Disposal of Surplus Aircraft and Major Components Thereof.* Report of the War Contracts Subcommittee to the Senate Committee on Military Affairs, June 26, 1944.

According to [the] report it was estimated that not more than 300 planes could be fully utilized in domestic contract cargo service. The 300 planes consisted of 75 planes smaller than the C-47 class, 200 planes of the C-47 class, and 25 planes of the C-54 class. Research suggests that planes smaller than the C-47 are usually too small for economical contract cargo operation. Part of the purpose of the present analysis is to show that probably there will be domestic contract air cargo for more than the 300 planes.

Airplane As a Domestic Contract Carrier

The present airlines and railroads and some trucking firms operate as "common carriers." The common carrier is under a duty to serve the general public without unjust discrimination or undue preference at reasonable rates which must be published and filed with proper regulatory bodies. Usually the common carrier travels designated routes, makes scheduled stops, and accepts all freight offered by shippers, in conformity with its published tariffs and within its capacity to serve. The term "contract carrier" is applied to all other carriers that transport in interstate or foreign commerce for compensation. A contract carrier does not undertake to transport for all who apply, but limits his service to specific shippers under special and individual contracts. In the case of motor carriers, where the type of operation is most commonly found, the carriers are required to publish and file with the Interstate Commerce Commission schedules of minimum rates and charges.

The contract-carrier type of air transport operation makes possible certain economies in handling air-freight shipments which apparently result in lower costs of operation than for common carriers. The 10-cent ton-mile cost of operating C-47 planes, as shown in the report *Post-War Air Transportation of Fresh Strawberries and Tomatoes from Florida to Detroit, Michigan,*[4] and the 6.55 cents per ton-mile cost of operating C-54A planes, as shown in the report *Post-War Air-Transport Costs and Markets for Lettuce,*[5] illustrate the economies which may be possible. This analysis examines further the basis for the assumptions made in these cost studies.

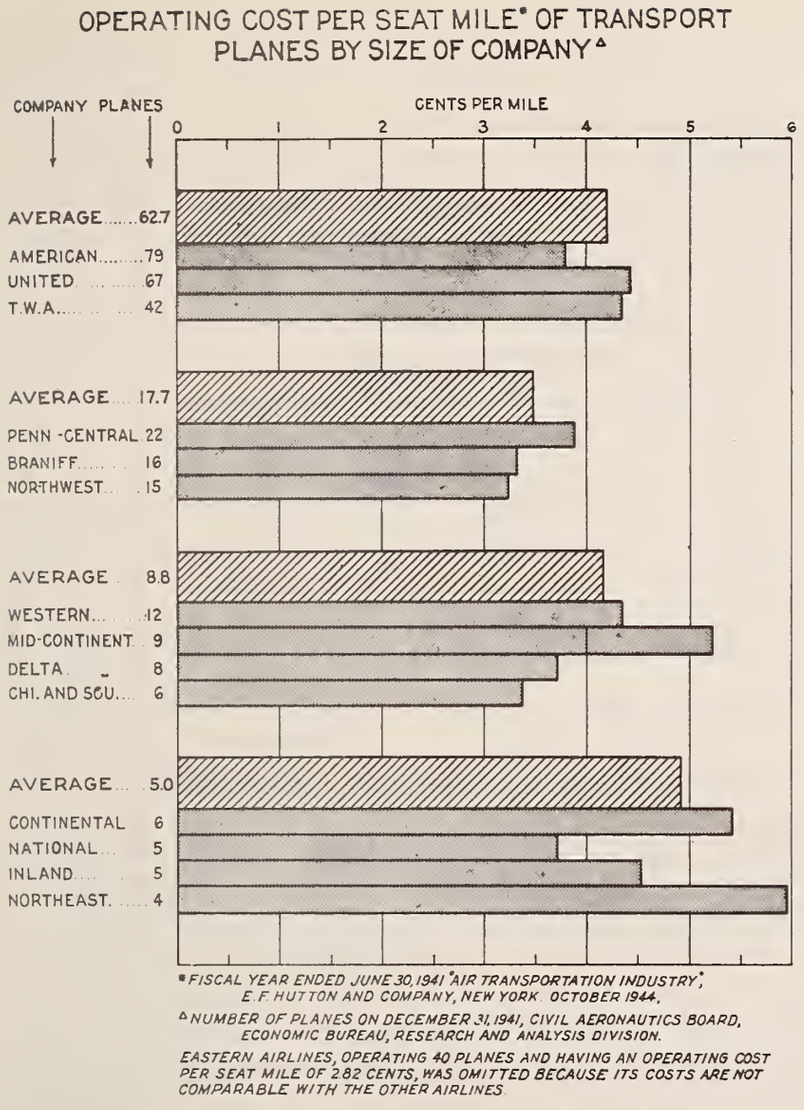
Surplus War Transport Planes and Pilots

Freight airlines starting operations within the next few years might utilize at a relatively low reconversion cost, surplus war transport ships of the type of the C-47 and the C-54A. The freight airline can readily use ships that have been in active military service 2 or 3 years. These ships may be disposed of to airline operators at "a low yearly value times expected years of economic life" as provided for in the report on surplus aircraft disposal.[6] Ships so purchased probably could be operated over a period of 5 years or more at very low amortized

[4]Bureau of Agricultural Economics and Edward S. Evans Transportation Research, March 1944.

[5]Id., July 1944.

[6]*Disposal of Surplus Aircraft and Major Components Thereof.* Report of the War Contracts Subcommittee to the Senate Committee on Military Affairs, June 26, 1944.



*FISCAL YEAR ENDED JUNE 30, 1941 "AIR TRANSPORTATION INDUSTRY", E.F. HUTTON AND COMPANY, NEW YORK. OCTOBER 1944.

△NUMBER OF PLANES ON DECEMBER 31, 1941, CIVIL AERONAUTICS BOARD, ECONOMIC BUREAU, RESEARCH AND ANALYSIS DIVISION.

EASTERN AIRLINES, OPERATING 40 PLANES AND HAVING AN OPERATING COST PER SEAT MILE OF 2.82 CENTS, WAS OMITTED BECAUSE ITS COSTS ARE NOT COMPARABLE WITH THE OTHER AIRLINES.

capital cost. Quantities of surplus parts also may be available under certain conditions.

Large numbers of demobilized Army and Navy personnel probably will be available at wages commensurate with other occupations of similar skill and risk.

Available cost figures indicate, although not conclusively, that airlines of medium size have unit costs as low as or lower than much larger airlines. This tendency is illustrated in the chart at the left.

On December 31, 1941, Northwest Airlines owned 11 DC-3's and 4 Electras, Penn-Central Airlines owned 18 DC-3's and 4 247D's, and Braniff Airlines owned 11 DC-3's and 5 DC-2's, or an average of 17.7 transport planes apiece. Converted into cargo-carrying capacity of C-54A's this would be equivalent to about an 8-plane fleet. This would provide a sufficient number of planes to have 6 in operation and 2 in reserve. On long hauls, 3 ships would be flying daily in one direction and 3 would be flying in the opposite direction. It is recognized that costs for an all-freight operation may be different from those for passenger operation, and also that the relation between total plane capacity and efficiency of operation may be different for C-54A's than for C-47's.

Interchange Agricultural Perishables with Industrial Commodities

The contract carrier operation should be based on the interchange of agricultural products and manufactured products (see diagram on next page). An all-freight operation probably could succeed only with difficulty in the movement of either agricultural or manufactured products exclusively. The quantities interchanged must be fairly constant. The principal movement of commodities probably will be perishable agricultural products from west to east and south to north, with industrial products on the return haul. No doubt there would be some contrary minor movement of commodities.

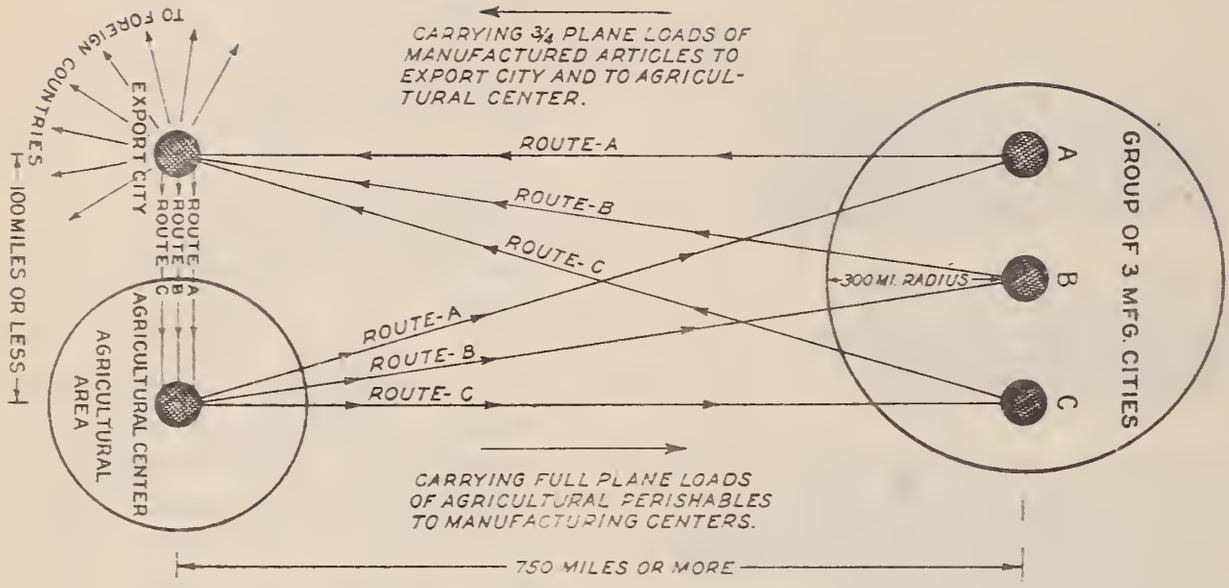


DIAGRAM ILLUSTRATING SCHEME OF INTERCHANGE BETWEEN MANUFACTURING AND AGRICULTURAL CENTERS VIA AN EXPORTING CITY BASED ON AN 8 AIRPLANE FLEET OPERATION, ALL CARGO.

It probably will be possible to provide full planeloads of agricultural perishables to move by air from extensive agricultural areas to metropolitan centers, but it probably will not be possible, at least in the beginning, to merchandise and ship by air a sufficient quantity of manufactured articles to provide full planeloads from a manufacturing center to an agricultural center. Data available are not adequate for a reliable estimate of the size of the east-west or north-south load. For this reason, the studies on contract-carrier operation between Salinas, Calif., and Detroit, Mich., and between Miami or Lakeland, Fla., and Detroit have assumed a 100 percent load factor eastbound or northbound and a 75 percent load factor westbound or southbound.

In the study on the air-freight potential of lettuce, the eastbound cost based on a 100 percent load factor was 6.55 cents per ton-mile [whereas] the westbound cost based on a 75 percent load factor was 9.08 cents per ton-mile. In actual practice it may be desirable to assess part of the westbound expenses to the eastbound traffic. This question involves broad transportation policy as well as matters of additional fact which can be determined only by further extensive investigations.

The route for a contract carrier operation between a manufacturing center and an agricultural center should be as direct as possible. It should be along an established airway that is equipped to permit night flying. In order to justify the cost of air transportation between these two centers they should be at least 750 miles apart. However, the longer the distance to be hauled the fewer the number of commodities which can stand any given level of rates. Preliminary research shows that air-borne products when transported 1,000 to 1,500 miles could compete most advantageously with surface-borne products.

The metropolitan centers should be a combination of cities so that sufficient cargo may be collected for the westbound or southbound movement. For efficient operation of the eight-plane fleet, the manufacturing centers should be within an approximate radius of 300 miles. This principle is illustrated in the lettuce study, the five large cities other than Detroit being within a 300-mile radius of Detroit. It may develop that in Detroit, Chicago, and Cleveland only enough industrial cargo could be supplied for one plane daily from each of these cities. On the other hand, it may develop that Detroit or Chicago could furnish enough cargo to justify operating the eight-ship fleet solely from the one city. The essential requirement is to have the airline terminal situated so that a combination of cities can be used in order to get maximum utilization from the eight-plane fleet. The best type of metropolitan center would be a manufacturing city which produces a variety of relatively high-priced manufactured articles.

Agricultural Areas Should Be Located Close to Sizable Export City

To insure a sufficient volume of manufactured products for the return load, it would be desirable that the area originating the agricultural shipments be within 100 miles of an important city exporting manufactured products. The city should be a focal point of departure for transport lines, preferably airlines, to foreign countries. The market for manufactured goods would be thus materially augmented by the inclusion of an extensive foreign market where the time factor is an important consideration.

An example of an agricultural area adjacent to an exporting city is San Francisco. It is close to the lettuce-producing area of the Salinas Valley as well as to areas producing a wide variety of other agricultural perishables. San Francisco is a port of departure for air commerce with the Orient and Australia. Another example is Tampa, adjacent to the Plant City-Lakeland agricultural district of Florida and a potential port of departure for air commerce to Latin America.

Airplanes carrying industrial commodities from a manufacturing center would fly direct to the exporting city adjacent to an agricultural area and unload the commodities for local distribution and foreign markets. The plane would then fly to the neighboring agricultural center and pick up the return load of perishables.

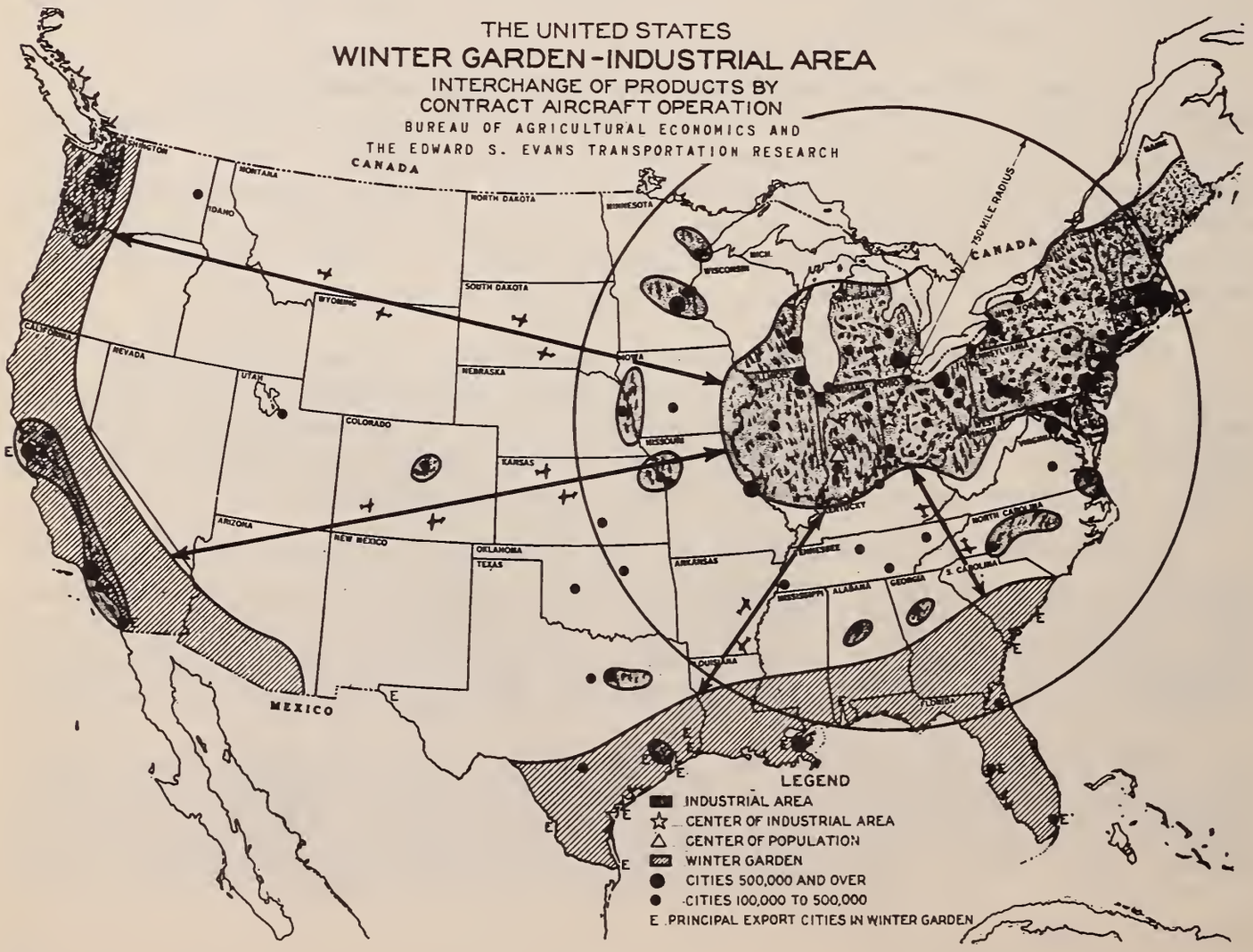
To maximize the development of the east-west or north-south load of industrial products, it probably will be necessary to fly to the same terminal city during the entire year. If shipments of perishables are not available during the entire year, the payload of the planes may be reduced to such an extent that the entire operation may not be feasible.

The originating point for perishables can be shifted with relatively little difficulty to any point within 300 to 400 miles of the terminus of the east-west or north-south shipments, but greater shifting causes difficulty. The lettuce report illustrates this principle. San

Francisco is the terminal for industrial products, and suitable perishables are available within 300 to 400 miles of the city for shipment during the entire year.

Speed in transit is the airplane's principal advantage over other means of transportation. A scheduled flight would leave the manufacturing center after the close of each business day [whereas] the opposite flight would bring agricultural perishables in time for early morning market. Within a relatively wide latitude, the time of departure and arrival could be regulated according to the nature of the commodity. As only fuel stops would be made, the flying time probably would be less between the manufacturing center and the exporting city than the time that would be consumed by scheduled airplanes over established airways. This would be of great value to the industries of the manufacturing metropolis.

The principles of the interchange of agricultural perishables with manufactured products is illustrated by the accompanying map, "The United States Winter Garden-Industrial Area Interchange of Products by Contract Aircraft Operation." This map shows the principal industrial areas in the United States, the center of manufacturing, according to the 1939 census, and the center of population based on this census. It also shows the southern and western agricultural producing areas which, on account of their winter and spring harvests, [are] termed the



"Winter Garden." The large black dots indicate the location of cities having a population of approximately 500,000 or over, [and] the small dots represent cities with a population of between 100,000 and 500,000. The "E" letters shown along the coastline of the map of the Winter Garden area represent the principal export cities in that area (present seaports and present and projected air gateways). The double-pointed arrows flanked by conventionally indicated airplanes illustrate the general interchange by contract air carrier between the manufacturing centers and the Winter Garden. The estimate of the probable number of ships that might be used in the air transportation of fruits and vegetables is based on this type of operation.

Fruit and vegetable shipments from the Winter Garden area to the northeastern industrial area of the United States which are potentials for air transportation are estimated at 5 billion ton-miles. The 5 billion ton-miles are net after eliminating the shipments which originated within 750 miles of their point of consumption and after eliminating fruits and vegetables such as potatoes, carrots, oranges, grapefruit, and so forth, which probably would not be shipped, for various reasons, in appreciable quantity under expected post-war conditions. In addition to the regular shipments now being moved by surface transportation, new business may be originated in the form of semitropical fruits; concentrated, consumer-packaged foods, such as fresh orange juice or spinach; and additional tonnage of products caused by an increase in the consumption of high-quality produce. Because of the difficulty in evaluating the potential quantity of this tonnage, no separate estimate was made but was weighted in the final estimate of the total ton-miles of fruit and vegetable shipments which may move by plane in the post-war era.

As one possible method of disposal of surplus war transport planes it was pointed out that the Harvard Report estimates [that] there would not be cargo for more than 300 planes operating as domestic contract carriers. In explanation of this estimate, the report goes on to say that the extent of contract cargo operations [is] not easily predictable and at the best the figures can be only "intelligent guesses." Much depends, the report states, upon the pricing policies and other policies finally adopted in surplus aircraft disposal and upon the attitude of the Civil Aeronautics Board. Without pretense of accuracy, according to the report, the figures indicate that this estimate could vary from nothing to substantial quantities. The report further states, "In domestic air-transport operations, amortization of the original airplane cost is a relatively small part of total costs, and therefore the price of the plane is not a major determinant of the demand for these planes. However, for possible contract cargo operation within the United States as well as abroad, the price at which these planes are offered is much more important. For such cargo work the utilization of equipment would not be so intensive as on scheduled airlines, and amortization would thereby become a much more important part of the cost."

Research by the Bureau of Agricultural Economics, the Edward S. Evans Transportation Research, and various airlines indicates that if air-cargo rates of less than 10 cents per ton-mile should be offered fruit and vegetable shippers, about one-third of the 5 billion ton-miles of fruits and vegetables originating from the Winter Garden area probably would move by air cargo. If it is assumed that one-third of the 5 billion ton-miles, or 1,667 million ton-miles, moves by air in the post-war era, a fleet of about 380 C-54A's would be required. To do the same job, a fleet of about 830 of the C-47's (a smaller plane) would be needed. The number of planes of each type would depend upon their availability and their relative suitability to the work to be done. For example, the total ton-mileage could be produced by a combined fleet of 605 planes, of which 190 would be C-54A's and 415 would be C-47's. Here the 190 C-54A's would contribute one-half the ton-mileage and the 415 C-47's the remainder. This number of usable planes is at least double the maximum number estimated in the Harvard report.

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FEBRUARY SET-ASIDE
CHEDDAR CHEESE QUOTA

The set-aside quota for Cheddar cheese will be 30 percent of production during February. During November, December, and January, the set-aside quota was established at 25 percent of production.

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CANNERS' SALE OF
ORANGE JUICE RESTRICTED

WFA has amended WFO 122, effective January 30, to require canners of orange juice produced from fruit grown in Florida and Texas to confine their sales, deliveries, and shipments to the armed forces.

Similar action was taken January 18, 1945, with reference to grapefruit juice and blended (orange and grapefruit) juice. Since the supply of oranges was considered ample to meet the demand, it was not contemplated at that time that it would be necessary to include canned orange juice. Later, however, abnormally heavy shipments of the product into trade channels caused concern over whether the armed forces would be able to obtain the quantities required.

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Under the Federal Seed Act both vegetable and field seeds are required to be labeled to show the quality. An article in last month's *Marketing Activities* stated that field seeds need not be quality-labeled under the act. This was an error.

ABOUT MARKETING:

The following reports and publications, issued recently, may be obtained upon request. To order, check on this page the publications desired, detach, and mail to the Office of Marketing Services, War Food Administration, Washington 25, D. C.

Addresses:

Food From Farm to Battlefront. January 10, 1945. . . . . (processed) . . . . . By Lee Marshall

Canned Fruits and Vegetables--1945. February 5, 1945 . . . . . (processed) . . . . . By Lt. Col. Ralph W. Olmstead

Reports:

Production and Consumption of Vegetables, United States, 1909-43. (Bureau of Agricultural Economics) December 1944. 32pp. . . . (processed)

Synthetic Fibers in Relation to American Cotton. (Bureau of Agricultural Economics) January 1945. 26pp. (processed)

Flaxseed--Production, Farm Disposition, and Value, by States, 1909-41. (Bureau of Agricultural Economics) January 1945. . . . 16pp. (processed)

Prices Received by Growers for Fruit and Nut Crops by Type of Sale and Utilization Groups. (Revised and enlarged.) (Bureau of Agricultural Economics) January 1945. 66pp. (processed)

Making the Most of Meats in Industrial Feeding. January 1945. 29pp. (processed)

Marketing the Michigan Grape Crop. January 1945. 4pp. (processed)

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LARD SET-ASIDE ORDER ISSUED

To meet war commitments, packers operating under Federal inspection are now required to set aside lard at the rate of 7½ pounds for each 100 pounds of live weight of each week's slaughter of hogs. On the average, this amounts to about 60 percent of the production of federally inspected lard. Since the order (Amendment 6, WFO 75.3, effective January 21) does not apply to non-federally inspected lard, it affects about 40 percent of the estimated production of all lard. The order does not require any set-aside on rendered pork fat.